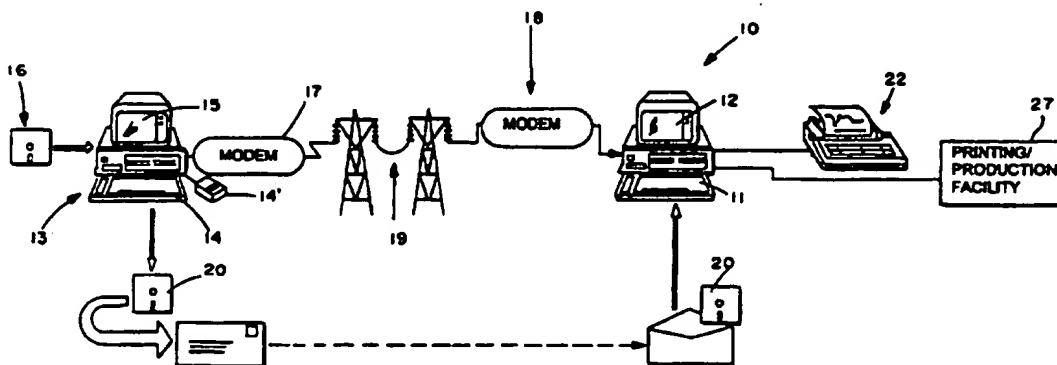




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(54) Title: METHOD AND SYSTEM FOR CHECKING PRINT ORDERS FOR SHORT RUN PRINTING APPLICATIONS
**(57) Abstract**

An electronic file specifying a variety of parameters for producing a designed document such as a custom business form is processed by computer to analyze automatically the variety of parameters specified in the electronic file, detect parameters that specify inconsistent, erroneous, or incomplete print data, and display a message relating to the detected parameters. At a document designing workstation running document design software, an operator generates an electronic file in the native original format of the document design software which includes a plurality of different document parameters defining how the designed document is to be produced. Page, font, color, image and other kinds of information stored in the electronic file are analyzed automatically by the computer to detect potential production problems as well as provide instructions regarding how to remedy those problems.

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METHOD AND SYSTEM FOR CHECKING PRINT ORDERS FOR SHORT RUN PRINTING APPLICATIONS

FIELD OF THE INVENTION

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The present invention relates to the creation and ordering of printed documents marketing brochures and other printed matter using a personal computer or graphics workstation. More particularly, the present invention relates to a method and system for automatically checking the printing parameters specified by the
10 designed document for potential printing inconsistencies, omissions, errors and other printing problems.

BACKGROUND AND SUMMARY OF THE INVENTION

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In the printing and creation of documents, custom business forms, customary practice has been for a sales representative of a printing business to design a printed document in house for a customer, then write up an order for the document and submit it to a
20 printing facility for production. The write-up of the document and the submittal of the order typically were done manually. However, for "short runs" of printed documents, e.g., less than several thousand, it is usually not cost effective to proceed in this customary manner. Alternatively, a customer's digital design file along with
25 accompanying support files would be manually collected and then electronically transmitted or transferred onto transportable media and delivered to the print shop. This method also would not guarantee that all required files were provided to the print shop as well as the fact that many times customer files would contain
30 potential print problems.

In response, several software packages have been developed and are currently marketed which allow a person to design printed documents directly on a personal computer. Printed documents having a wide variety of parameters, designs, verbiage and the like are designed at the customer's personal computer using one of the many different desktop publishing software packages available such as QuarkXPress® available from Quark, Inc. of Denver, Colorado. Accordingly, a customer designs a document and then submits the design in electronic digital form (i.e. in the native format of the design software) to a printshop for printing. For example, the customer can place an order for the custom designed document directly from his/her personal computer by electronically transmitting the document parameters as well as other information to an order receiving location. At the order receiving location sometimes referred to as the "pre-press facility", an order verification is printed, credit is verified or payment made by credit card or the like, and a determination is made regarding the best location to print the document based upon where the document is to be delivered, document parameters, and the like. The document and order information are then transmitted electronically to a printing location at which the document is printed and shipped. This short run application procedure gives the customer a hands-on environment to create his own promotional material and thereby eliminates the need, time and expense required to have a sales representative design the document for the customer. Typically, when the digital copy is received at the printing location, a formal "pre-flight" procedure is manually performed on the customer file. When problems are encountered the customer is notified and given the opportunity to resubmit the file with corrections, or the print shop will repair the file at an hourly charge.

A concern with short run print orders is that the order submitted to the printshop for production be both accurate and complete. However, since short run printing applications are generally turned around in less than 24 hours, there is little time for
5 a printshop to thoroughly review an order, i.e., check the computer generated customer design print file, for completeness, correctness and consistency prior to printing. If the customer order printing parameters are not complete, accurate, and consistent with the printing parameters used at the print shop, the print job will not be
10 run satisfactorily.

This is a particularly troublesome problem with complex printing jobs involving for example a large number of colored illustrations and stylized textual information which are difficult to
15 manually review to determine if any printing errors exist. One example of a printing error is the print shop does not offer a particular color selected by the customer. As a result, the print system will typically default to an alternate color which may not satisfactorily match the color the customer originally selected.
20 Another example is a font specified by the customer may not be available from the font library offered by the printhouse, and as a result, a default different font is used to print the textual information of the custom document. Again, the customer may not be happy with the default font. The selection of fonts is particularly problematic in
25 many print orders because there are currently close to 30,000 font types available. As a practical matter, a printshop may only retain several hundred font types in its current library out of the 30,000. In addition, while the font type may have a single name identified with the font type (two companies may print different font styles under
30 that same name).

The above examples highlight problems when the print system defaults to a selection which was not intended by the customer. A further problem occurs when there is no default parameter programmed or provided in the printing system. In that case, if a customer specified print parameter is unavailable or in error, the print system halts the printing operation or may not even start the printing operation.

One way to detect these errors before running the print order is to print out a pseudo-document using a laser printer based on the customer's document design parameters. While the laser printer output may provide some indication as to how a document will look before starting the actual printing operation, a laser printer cannot print all of the printing parameters designated in a customer's electronic print file. In other words, the true visual impact of the printed document cannot be fully judged. Moreover, this "proofing" operation delays the turn around of the short order run as well as increases the expense.

The present invention resolves these problems and permits the customer/user to prepare a printed document and automatically check the electronic document design file while the document is being designed and before that file is delivered to a document production facility. The present invention therefore enhances the document design process by allowing a user to automatically check the current document at any point in the design process for errors, omissions, and inconsistencies in the document parameters specified in the design document file. Moreover, there is no need for the designer to reformat the design document file from its native format into a standard format for checking. Each time the design document file is

checked, all potential print problems are identified for the user so that they can be corrected. The various detected errors are displayed in a user-friendly format along with instructions as to how to resolve the detected errors. Accordingly, the user may quickly correct the document file without having perform multiple conversions between some standard format for checking the document file and the original or native document design format. At completion of design, the user executes a "prepare" option that gathers all supporting files (images, fonts, etc.) of the document into a common location so that the document and supporting files may be easily transferred.

The present invention may be used in conjunction with existing document design software to identify and display to the designer the various potential document production problems such as:

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- missing fonts and images;
- fonts stylized at the application level;
- improperly defined colors;
- colors defined but not use;
- improperly scaled images;
- skewed/rotated images;
- images with dots per inch less than 300;
- cropped images;
- missing/modified images;
- elements requiring bleed;
- modified trapping information;
- line weights less than 0.25 points.

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According to one aspect of the present invention, a document design system is provided. A document designing work station

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including a computer running document design software (like QuarkXPress®) enables an operator to generate an electronic file storing a plurality of different document parameters specifying a custom document. At any time during or after the design process, software control means controls the computer to automatically check the different document parameters stored in the electronic file in the existing or native format specified by the design software. More specifically, the software control means controls the computer to identify document parameters stored in the electronic file that may create potential problems in printing or otherwise producing the designed document.

As defined in the context of the present invention, potential print problems include (but are not limited to) an erroneous printing parameter, a missing printing parameter, or a printing parameter that is inconsistent with a predetermined set of printing parameters. Potential print problems further encompass any parameters specified in the print file which when executed during a print run might cause the ultimate printing operation to (a) not start, (b) abort, (c) be delayed, or (d) generate an unsatisfactory document.

The software control means further controls the computer to display messages to the operator relating to document parameters identified as potentially causing problems in printing or otherwise producing the document. Messages may be further displayed which explain those problems and provide instructions as to how to correct those print problems. Typical document parameters include page information, font information, color information, and image information, and the messages specified print/production problems with any of the page, font, color, image information.

According to another aspect of the present invention, a method for designing and printing a document is provided. At a first location, a document is designed using document design software and a plurality of print parameters defining the document in electronic format specified by the document design software are stored in an electronic file. The electronic file may be transferred to a remote second location where the production of the document is coordinated. Before printing the document, however, the electronic file is automatically checked at either the first or second location to determine whether there may be a problem in printing the document using the print parameters defining the document in the native electronic format specified by the document design software. When a problem may occur in printing the document, that problem is indicated to an operator along with a message regarding how to remedy the indicated problem.

Although the present application provides particular applicability in short run printing operations, it may be applied to the process in electronic files specifying a variety of parameters for printing a custom document of any size run that includes the computer executed steps of analyzing the variety of parameters specified in the electronic file, detecting parameters that specify inconsistent, erroneous, or any incomplete print data, and displaying a message related to the detected parameters.

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According to another aspect of the present invention, a tool is provided for use in the design of a document to be printed/produced where the document design is specified by a plurality of printing parameters stored in the native format of the document design software. The tool includes means for automatically analyzing any

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time during or after the document design process the plurality of printing parameters in the format of the design software to determine when one or more of the analyzed printing parameters is likely to cause a problem in printing the document. A means for
5 automatically analyzing compares the plurality of printing parameters with a predetermined set of printing parameters to determine if any of the printing parameters is erroneous, absent, or inconsistent with respect to the predetermined set of printing parameters. The means for indicating indicates to an operator
10 (1) whether a problem is likely to occur during printing the document, (2) one or more specific print parameters likely to cause a printing problem, and (3) how to remedy the indicated problem.

These and other features and advantages of the present
15 invention will be readily apparent to one of ordinary skill in the art from the following written description read in conjunction with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

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Figure 1 is a schematic of example hardware which may be utilized as a part of the system according to the present invention;

Figures 2(A) - 2(C) are flowcharts illustrating software control
25 procedures for implementing one embodiment of the present invention; and

Figures 3(A) - 3(D) are pictorial representations of screen displays generated in response to an example of a document design
30 checking operation.

DETAILED DESCRIPTION OF THE DRAWINGS

In the following description, for purposes of explanation and not limitation, specific details are set forth, such as particular hardware and techniques in order to provide a thorough understanding of the present invention. However, it would be apparent to one skilled in the art that the present invention may be practiced in other embodiments that depart from these specific details. In other instances, detailed descriptions of well-known methods and devices are omitted so as not to obscure the description of the present invention with unnecessary detail.

Figure 1 schematically illustrates an example of a system utilizing the present invention. A desktop document design and order system such as that disclosed in U.S. Patent 5,241,464 and assigned to the present assignee (the disclosure of which is incorporated herein by reference) is one environment in which the present invention may be used. Even though an entire document design and printing system is shown, those skilled in the art should appreciate that the present invention simply may be used by an operator at a single computer workstation executing document design software.

The hardware includes a computer station 10 which preferably includes a keyboard 11 and/or other operator input means (e.g., a mouse) and a monitor display 12 at a first location such as a printing order reception facility. Computer station 10 preferably comprises a personal computer for storing and manipulating data. Another computer station, such as computer 13, having a keyboard 14 and/or other operator input means such as mouse 14' and a monitor 15 is

provided at a second location that may be remote from the first location. As mentioned above, the present invention may be used simply at a stand alone, computer station such as computer station 13 without any interface or communication with another facility such as computer station 10.

Any suitable desktop/publishing/document design software package may be used by the operator, stored for example on floppy disk 16 or other memory, may be used in conjunction with the computer station 13 to custom design a wide variety of document parameters that may be used to produce printed documents such as custom business documents. One such desktop document design software is the QUARKXPRESS electronic publishing software package available from Quark, Inc. in Fort Collins, Colorado in conjunction with Quark programs such as Adobe Illustrator 88 which permit creation of high resolution black and white and color encapsulated postscript (EPS) pictures may be employed.

The document design software is used in conjunction with the computer station 13 by an operator to design the document which is stored in a digital "native" format specified by the document design software as an electronic file. The electronic file is communicated, for example, by way of modems 17 and 18 (carried over public telephone lines 19), to the computer station 10 at the order reception facility. Alternatively, the electronic files may be captured on disk 20 and mailed to the order receiving facility where computer 10 is located.

At the order receiving facility, the orders and electronics files are received by the computer 10, and are logged, with the order information desirably retained for possible reorders. As described

above, a proofing prerun may be printed out on a proof printer 22 for review and editing. The computer 10 also communicates with a document printing or production facility 27. Computer 10 determines an available printing production facility 27 best suited for producing the particular document, depending upon scheduling, geographical location and capabilities of the facility 27. Ultimately, the documents are printed at production facility 27 and shipped to whatever location the customer specifies, whether at the same location as personal computer 13 or some other branch office of the customer.

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An advantage of the present invention is that the electronic file need not be reformatted into another format such as a PostScript format in order to analyze and check the printing parameters in the electronic file. The present invention is adapted to be readily incorporated with and in the original, native format of the document design software. In this regard, a "printed document" or simply "document" may include a wide variety of verbiage, graphical representations, positioning of component parts, and the like determined by the designer and oftentimes includes complicated color graphics such color encapsulated postscript pictures. As mentioned above, although the present invention may be used at any computer station such as the document designer's computer 13, the computer 10 located at the ordering facility, or a computer at the ultimate printing facility 27, the description focuses on the preferable use of the present invention at the designer's computer 13.

A customer or other operator designing a printed document using a personal computer, workstation, or any other suitable computer 13 (e.g., the Apple Macintosh Quadra 800 Work Station) and using printed document design software, (such as the

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QUARKXPRESS software described above), specifies a wide range of printing parameters, such as general document information, page information, font information, color information, image information, and trapping information among other things. General document information may include, for example, document name, directory including a full path name, document version, creation date, particular software package used to design the document, and particular type of computing hardware, e.g., Macintosh Quadra 800. The page information may include, for example, page number, master page name, height, width, top margin, bottom margin, left margin and right margin among other things. The font information may include both document fonts by name and style and image file fonts used in an image context by name and style. The color information may include both document and image file color information such as color name, color model name, separation on/off, cyan %, magenta %, yellow %, black %, green %, red %, and blue %. The image information may include the image file name, format, type, page, scaling data, angle, skew, status, size, image dimensions, and box dimensions.

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When a multi-color document is reproduced, a white area can occur between adjacent objects of different colors. That white area can be caused by misalignment, mis-registration, or shifting/stretching of paper on a press. Trapping enlarges adjacent areas of colors to compensate for incorrect alignment of colors that can occur on-press. Trapping values are based on the press, ink, paper and other materials used. The trapping information may include, for example the following parameters, automatic amounts (controls the amount of trapping that QUARKXPRESS applies to object and background colors); automatic methods (absolute - traps

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using the value in the auto amount field and proportional - traps using a fraction of the value in the auto amount field); process trap (process separation plates are trapped individually when a page contains overlapping process colors); ignore white (specifies an object
5 color in front of multiple background colors that include white not to take white into account when trapping); indeterminate (controls the amount of trapping that QUARKXPRESS applies to object colors that are in front of indeterminate backgrounds (i.e., multiple colors with conflicting trapping relationships)); and overprint limit (specifies the
10 shade at or above which an object color will overprint its background color).

Of course, these types of printing information are for purposes of example only, and any other additional types of printing
15 information could be used.

In one embodiment, the present invention may be viewed as a software tool for assisting and improving the design of a printer document. The document design is specified by a variety of printing
20 parameters, such as those listed above, stored in digital, native format specified by the document design software (e.g., QUARKXPRESS) in an electronic file on suitable memory storage means such as semiconductor RAM or magnetic floppy disk. The software tool, described in more detail below, instructs the computer
25 to automatically analyze the printing parameters stored in the electronic file in the native design format to determine when one or more of the analyzed printing parameters is likely to cause a problem with respect to the printing of the document. As mentioned above, this software tool may be used at any computer station, but

preferably typically at the computer workstation 13 where the designer is designing the document.

A predetermined set of instructions, printing parameters, and options available for producing documents at the production facility 5 27 are stored in the computer's memory. The specified printing parameters stored in the document design software native format in the electronic file corresponding to the document design are compared with the predetermined set of instructions, printing parameters, and options to determine if any are unavailable, inconsistent (e.g. out of 10 range), or simply in error with respect to the predetermined set of printing parameters.

Each detected potential problem is indicated to the operator in 15 some fashion, such as by highlighting or flagging the particular parameter on the computer display terminal. Obviously, other means of indication could be used such as audible warning. In addition, an explanation of the nature of the potential problem and/or instructions of how to remedy the potential problem are also provided, e.g. by 20 display.

Thus, the present invention describes a method for computer processing an electronic file specifying in the native document design software format a variety of parameters for producing a customized 25 document, including for example the steps of analyzing the variety of parameters specified in the electronic file, detecting the parameters that specify inconsistent, erroneous, or incomplete print data, and displaying a message relating to the detected parameters.

The present invention also provides a printed document design system that includes a document designing workstation including a computer enabling an operator to generate an electronic file storing a plurality of different document parameters specifying a document to be printed. Software control means control the computer to automatically check the different document parameters stored in the electronic file in preparation for printing the document. The software control means controls the computer to identify document parameters stored in the electronic file that may create problems in printing the custom document. More specifically, the software control means compares the plurality of document parameters with the predetermined set of document parameters to determine if any of the plurality of document parameters is erroneous, absent, or inconsistent with respect to the predetermined set of document parameters.

At a larger system level, the present invention may be used to provide an improved system for designing and printing a document where at a first location such as the customer's home or office, a print document is designed and a plurality of parameters defining the document is stored in electronic format in an electronic file. The electronic file is communicated to a second location such as a document production business facility, and at the second location, production of the designed document is coordinated. Before production, the electronic file is automatically checked, (either at the first or second location or both), to determine whether there may be a problem in printing the designed document using the document parameters defining the document in an electronic format. After the checking operation, the document may then be produced.

Flowcharts which describe the design document checking operation implemented using software control means such as a programmable computer, are now described in conjunction with Figures 2(A) - 2(C). The document check routine 30 first decides
5 (block 32) whether an electronic document file for a designed document has been created. If so, document file checking options are enabled (block 34). This particular flowchart illustrates therefore that the present invention may be used, for example, as an important extension to existing document design software, and may be included
10 as one of many options that a document designer or other operator may select from a computer menu screen.

Once the document file checking option is selected (step 36), a document file checking window or display is established (step 38).
15 This window indicates to an operator that the computer is ready to receive an electronic file which specifies various printing parameters for designing a document. In step 40, the document file related to a currently designed document including general, page, font, color, image, or trapping, etc. information is for retrieved analysis. Each
20 type of specified document information is automatically processed beginning, for example, with the font information (step 42). Potential production problems regarding the selected fonts are determined (step 44) by comparing the selected fonts with the fonts available at the production center and by detecting whether all fonts necessary for
25 production have been specified in the electronic file. If a problem is detected (step 46), the appropriate font detail line in the electronic file that may pose a problem is flagged (step 48).

The color information selected for the designed document is
30 processed (step 50) and checked for potential problems (step 52). If a

potential problem is detected, the appropriate color detail line is flagged (step 56). Selected image information is processed (step 58) and checked for potential production problems regarding that information (step 60). If a problem is detected (step 62), the image
5 file detail which may cause the problem is flagged (block 64). Other selected document information from the electronic file is also processed (block 66) and checked (block 68) for potential production problems. If a potential problem is detected (step 70), that corresponding detail/line is flagged (step 72). A display and/or report
10 (to be described in further detail below) is then provided to an operator (step 74) listing for example the flagged items, an explanation of why the flagged items may be a problem for production, and instructions/suggestions of how to eliminate the problems.

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An example of how the present invention may be applied to analyze a custom designed document whose parameters are stored in an electronic file in the document design software format for a motel marketing brochure including a variety of page, font, color, image and
20 trapping information will now be described in conjunction with Figures 3(A) - 3(D). Significantly, the document file is analyzed directly in the document design software native file format. There is no need to convert the document file format to some general or standardized format before checking the file. This allows an operator
25 to readily and directly check a designed document file during and after the design process.

Figure 3(A) shows a display of general information, such as document name, the directory and can include any other information
30 which may be of use for identifying or explaining the document

design or the electronic document file. Page information specifies the height and width of the page as well as various margin dimensions. The font information includes the variety of fonts specified by the electronic document file.

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After this document file information was automatically checked in accordance with the present invention, it was determined that the document font corresponding to Century-Book (the PostScript font name) or the ITC Century Book (the Macintosh font name) in bold style may cause a production problem. That particular font information line or detail is therefore indicated, e.g., highlighted, using a plus symbol adjacent that information line font. A statement is displayed that the indicated font may cause production problems, and the potential problem is explained, such as "a style attribute is not always available as a printer font." The present invention also provides the operator with instructions on how to correct the potential problem, i.e., "use the actual stylized type face if it is available."

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Figure 3(B) shows displays relating to the color information specified in the electronic file of document parameters. Specific features of the document such as the document, the motel logo, various objects in and areas of the document, each have a specific color identified with process separation being specified as on or off along with the percentages of various color inks needed to print a particular document background, logo, object, area, etc. Again, several of the color lines/details are marked with a bullet symbol to highlight potential print problems with those color selections. An explanation and proposed solution to the problems are provided.

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In addition, colors and other parameters which may have been initially defined but ultimately will not be used in the production of the designed document are identified. As indicated in the display screen of Figure 3(B), the operator is encouraged to consider deleting
5 these unused color parameters to speed up processing time.

Figure 3(C) illustrates an example of image information displayed as a result of the automatic electronic file checking operation. The image information includes, for example, an image
10 format, type, the page on which the image information is to be printed, various scaling information (e.g., X-scale and Y-scale), orientation information (e.g., angle and skew), status, and size information. The actual XY coordinate and various dimensional information relating to the image are also specified. Again, potential
15 production problems with the image information are highlighted or flagged. Of course, any highlighting/indication mechanism could be used. Explanations of the potential problems and instructions of how to remedy those problems are provided. Similar information is illustrated in Figure 3(D) regarding trapping information as well as
20 any other additional problems which may have been detected while analyzing the parameters set forth in the electronic document file.

Thus, the present invention overcomes many of the drawbacks that plague short run print document applications by automatically
25 checking at any time during or after the design process in the native format of the document design software the document parameters specified by a user directly at user's PC. In addition, the present invention may be used at the production facility or at any computer for that matter, in order to identify potential production problems
30 and offer solutions so that those problems can be corrected before

document production takes place. This saves time and money as well as eliminates the need to have an operator manually proof the document parameters and/or perform test production runs to generate sample documents on a laser printer or other printing
5 mechanism.

The present invention also solves perhaps a larger problem of printing up documents that ultimately are not what the customer orders or wants. Rather than substituting arbitrary default
10 parameters for missing or erroneous document parameters included in the electronic document file, the designer personally has the opportunity to detect potential production problems and choose alternative document parameter selections satisfactory to the designer before placing the order. Similarly, the ordering and/or
15 production facility may double check the document file, and if a potential problem is detected, the designer may be contacted with a specific explanation of the problem and proposed solutions/changes that the designer can authorize.

20 It will thus be seen that according to the present invention, an effective and advantageous method and system have been provided for the design, checking, and production of short runs of document. The designed document is checked automatically in the native document design software format for potential production problems so
25 that any detected problem can be eliminated/corrected before production. Of course, the present invention may equally advantageously be applied to any size run of documents large and small. While the invention has been shown and described in what is presently believed to be the most practical and preferred
30 embodiment, it will be apparent to those of ordinary skill in the art

that many modifications may be made within the scope of the invention, which scope is to be accorded the broadest interpretation of the appended claims so as to encompass all equivalent systems, procedures, and configurations.

WHAT IS CLAIMED IS:

- 1 1. A document generation system comprising:
2 a document designing work station including a computer
3 enabling an operator to generate an electronic file storing a plurality
4 of different document parameters specifying a document to be
5 produced, and
6 software control means for controlling the computer to
7 automatically check the different document parameters stored in the
8 electronic file in preparation for producing the document.
- 1 2. The system in claim 1, wherein the software control means
2 controls the computer to identify document parameters stored in the
3 electronic file that may create problems in producing the document.
- 1 3. The system in claim 1, wherein the software control means
2 compares the plurality of document parameters with a predetermined
3 set of parameters to determine if any of the plurality of document
4 parameters is erroneous, absent, or inconsistent with respect to the
5 predetermined set of parameters.
- 1 4. The system in claim 2, further comprising a display,
2 wherein the software control means controls the computer to display
3 messages to the operator on the display relating to the identified
4 document parameters.
- 1 5. The system in claim 4, wherein the messages display
2 specific problems identified by the computer with document
3 parameters stored in the electronic file.

1 6. The system in claim 4, wherein the messages display
2 instructions of how to correct the problems identified by the computer
3 with document parameters stored in the electronic file.

1 7. The system in claim 5, wherein the document parameters
2 include page information, font information, and color information and
3 the messages specify problems with any of the page, font, and color
4 information.

1 8. The system in claim 5, wherein the document parameters
2 include image information including size and orientation of images
3 included in the document and the messages specify problems with
4 any of the image information.

1 9. The system in claim 1, further comprising:
2 a remote processing center including a computer for receiving
3 the electronic file specifying a plurality of different document
4 parameters for a designed document and automatically checking the
5 different document parameters stored in the electronic file in
6 preparation for producing the document for potential problems.

1 10. The system in claim 1, wherein the potential production
2 problems include missing or unavailable fonts specified in the
3 electronic file.

1 11. The system in claim 1, wherein the potential production
2 problems include undefined or incorrectly defined colors.

1 12. The system in claim 1, wherein the potential production
2 problems include improperly scaled, skewed, or rotated images.

1 13. A method for computer processing an electronic file
2 specifying a variety of parameters for printing a designed document,
3 comprising the computer executed steps of:

4 (a) analyzing the variety of parameters specified in the
5 electronic file;

6 (b) detecting parameters that specify inconsistent, erroneous,
7 or incomplete print data; and

8 (c) displaying a message relating to the detected parameters.

1 14. The method according to claim 13, wherein the electronic
2 file stores the specified variety of parameters in a native format of
3 document design software used in designing the document and
4 wherein step (a) further comprises:

5 comparing the variety of parameters in the native document
6 design software format with a predetermined set of printing
7 parameters to determine if any of the variety of parameters is
8 erroneous, absent, or inconsistent with respect to the predetermined
9 set of printing parameters.

1 15. The method according to claim 14, further comprising:
2 displaying when a potential problem may occur in printing the
3 designed document.

1 16. The method according to claim 14, further comprising:
2 displaying one or more parameters that may cause a problem
3 in printing the designed document.

1 17. The method according to claim 15, further comprising:

2 displaying to an operator how to remedy the displayed
3 problem.

1 18. A method for designing and printing a designed document,
2 comprising the steps of:

3 (a) at a first location, designing a designed document and
4 storing a plurality of print parameters defining the document in
5 electronic format in an electronic file;

6 (b) transmitting the electronic file to a remote second location;

7 (c) at the second location, coordinating production of the
8 designed document;

9 (d) automatically checking the electronic file, at either the first
10 or second location, to determine whether there may be a problem in
11 printing the designed document using said print parameters defining
12 the document in electronic format; and

13 (e) printing the designed document.

1 19. The method according to claim 18, wherein step (d) further
2 comprises:

3 indicating to an operator when a problem may occur in
4 printing the designed document.

1 20. The method according to claim 19, wherein step (d) further
2 comprises:

3 indicating one or more print parameters that may cause a
4 problem in printing the designed document.

1 21. The method according to claim 19, wherein step (d) further
2 comprises:

3 indicating to an operator how to remedy the indicated problem.

1 22. A tool for use in the design of a document to be printed
2 where the document design is specified by a plurality of printing
3 parameters stored in an electronic format specified by document
4 design software used in designing the document, comprising:
5 means for automatically analyzing the plurality of printing
6 parameters in the electronic format; and
7 means for determining when one or more of the analyzed
8 printing parameters is likely to cause a problem in printing the
9 document.

1 23. The tool in claim 22, wherein the means for automatically
2 analyzing compares the plurality of printing parameters with a
3 predetermined set of printing parameters to determine if any of the
4 plurality of printing parameters is erroneous, absent, or inconsistent
5 with respect to the predetermined set of printing parameters.

1 24. The tool in claim 22, further comprising:
2 means for indicating to an operator when a problem is likely to
3 occur in printing the document.

1 25. The tool in claim 22, further comprising:
2 means for indicating one or more print parameters likely to
3 cause a problem in printing the document.

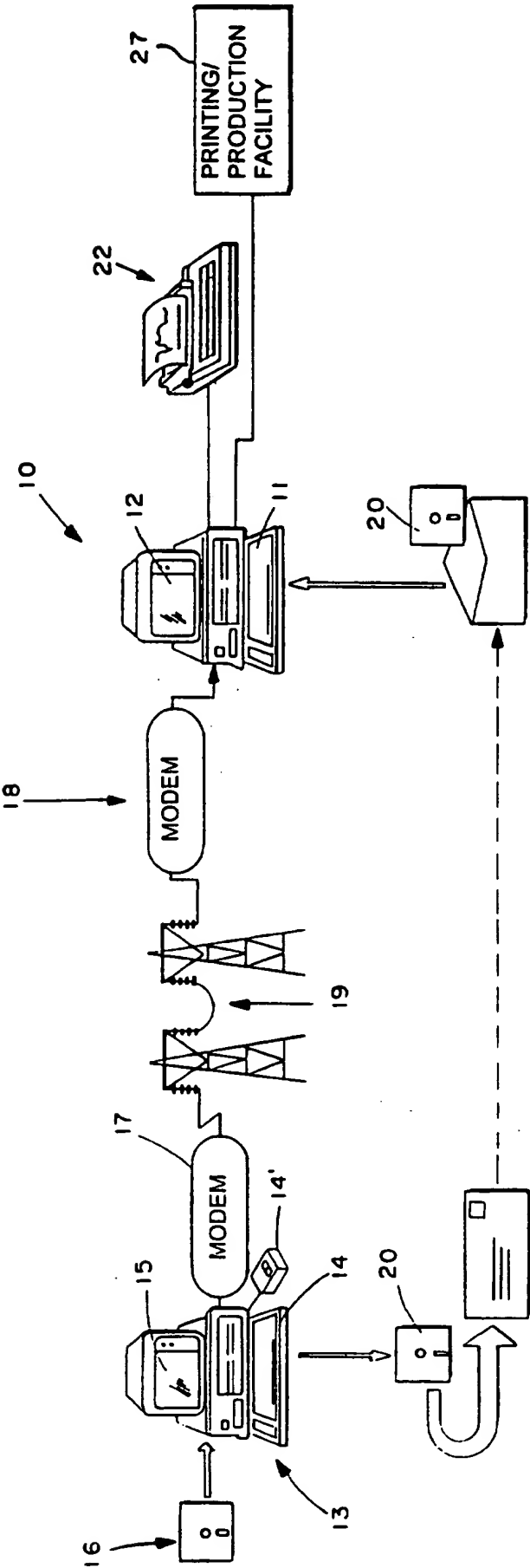
1 26. The tool in claim 24, further comprising:
2 means for indicating to an operator how to remedy the
3 indicated problem.

1 27. The tool in claim 22, wherein the means for automatically
2 analyzing analyzes design fonts included in the plurality of printing
3 parameters and compares the design fonts with fonts available for
4 printing and the means for determining determines when the
5 compared fonts differ.

1 28. The tool in claim 22, wherein the means for automatically
2 analyzing analyzes design color parameters included in the plurality
3 of printing parameters and compares the design color parameters
4 with document color parameters available for printing and wherein
5 the means for determining determines when the compared color
6 parameters differ.

1 29. The tool in claim 22, wherein the means for automatically
2 analyzing analyzes design image parameters included in the plurality
3 of printing parameters and compares the design image parameters
4 with image parameters permitted for printing and the means for
5 determining determines when the compared image parameters differ.
6

FIG. 1



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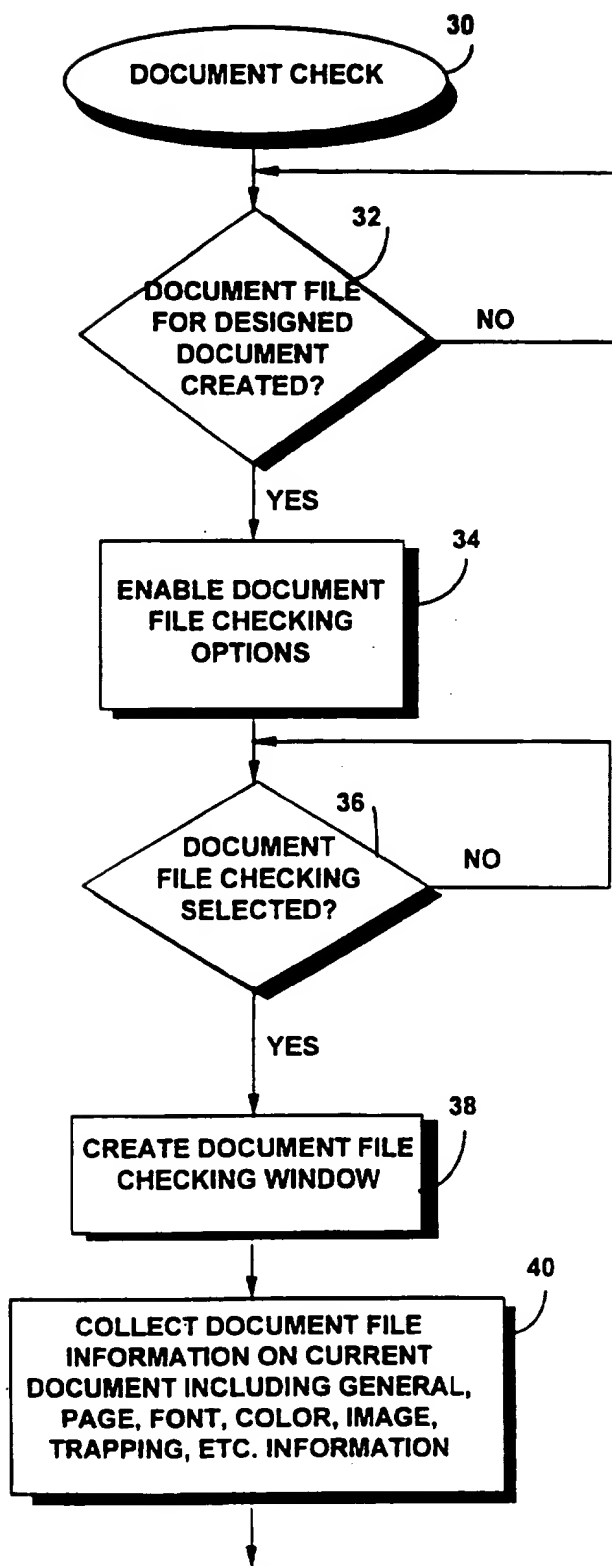
FIG. 2A**FIG. 2****FIG. 2A****FIG. 2B****FIG. 2C**

FIG. 2B

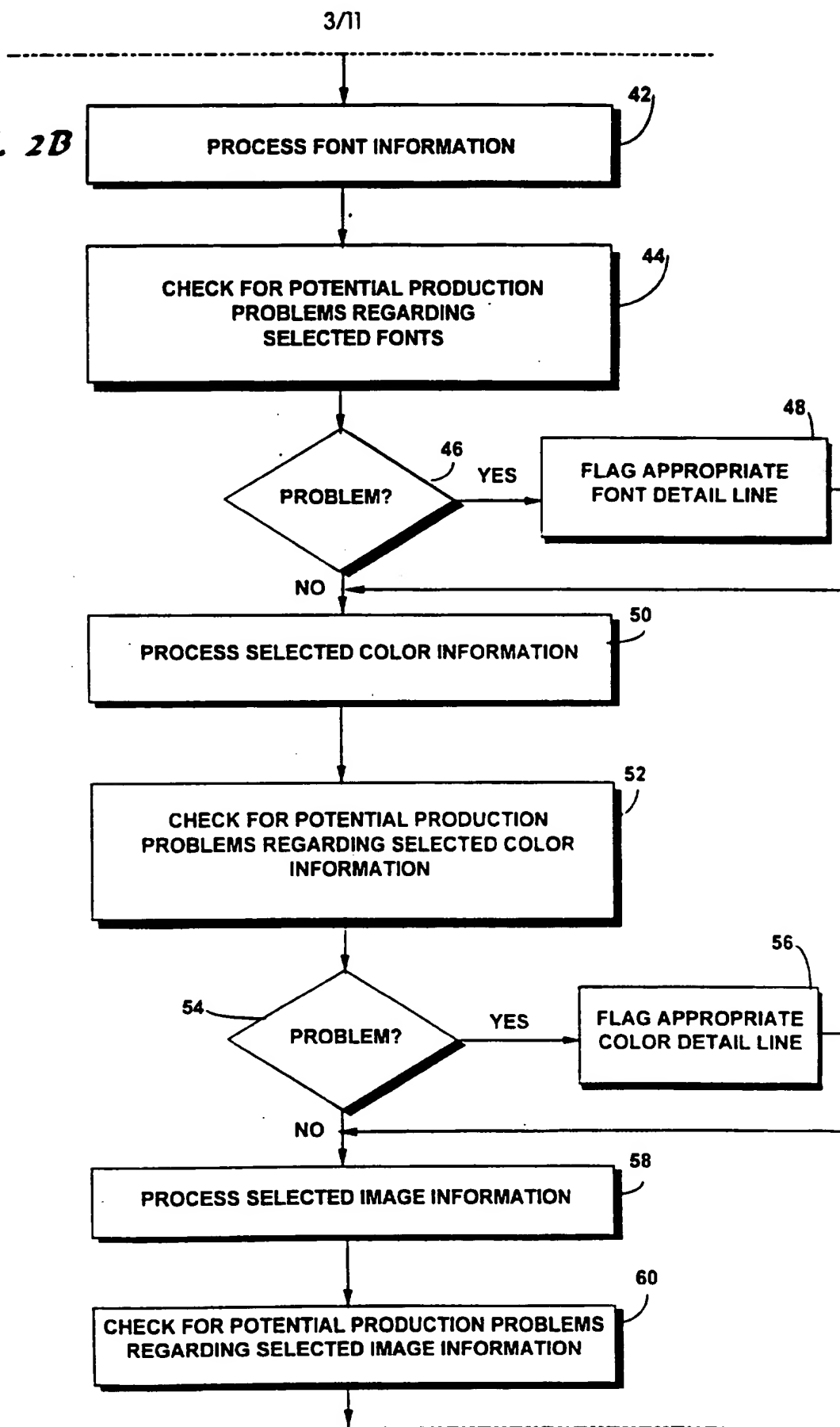
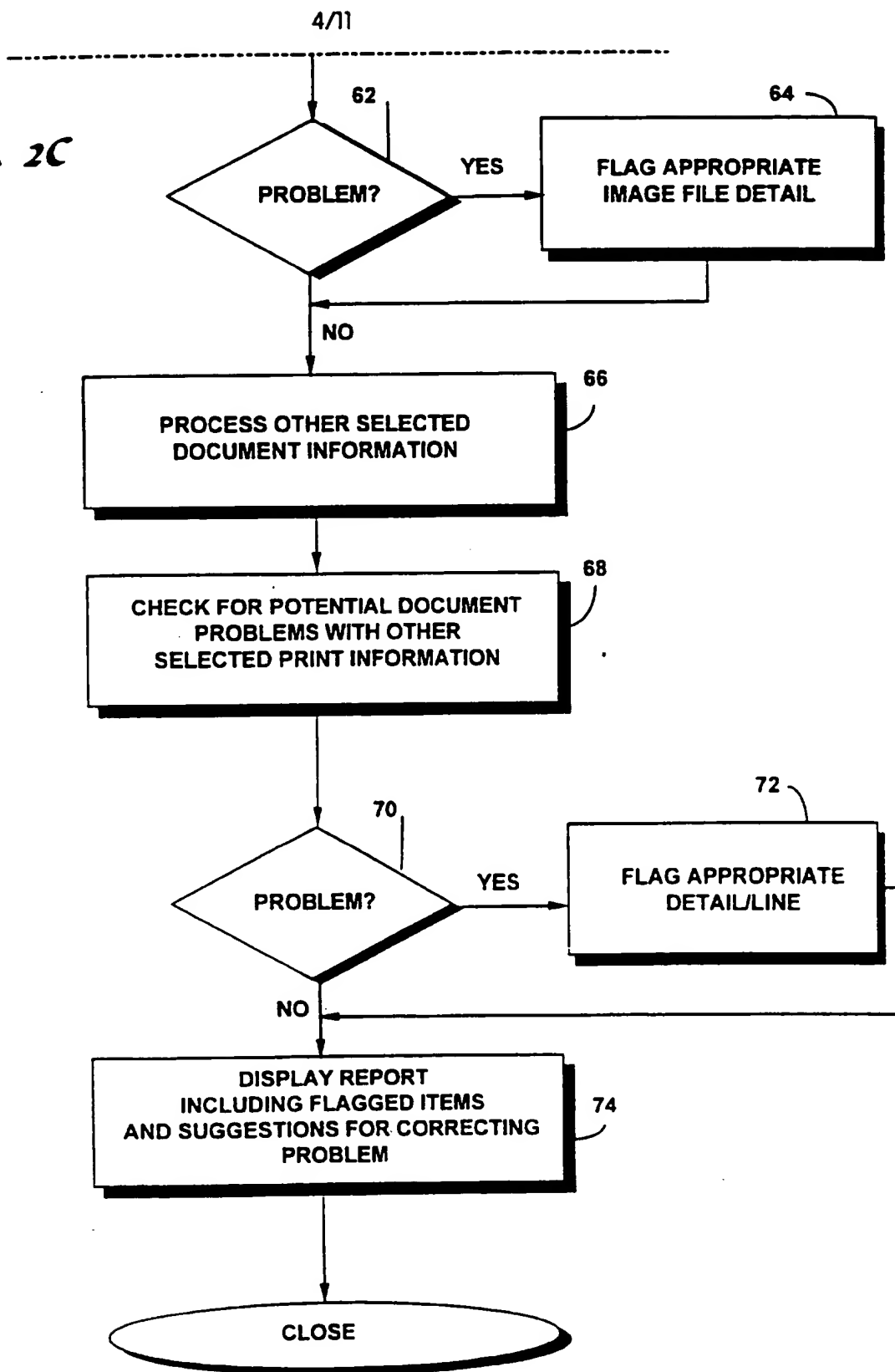


FIG. 2C



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FIG. 3(A)**GENERAL DOCUMENT INFORMATION**

DOCUMENT NAME: MOTEL BROCHURE

DIRECTORY: PASCAL: MOTEL

PAGE INFORMATION

PAGE	MASTER	HEIGHT	WIDTH	TOP	BOTTOM	LEFT	RIGHT
1	MASTER A	8"	9"	0"	0"	0"	0"
2	MASTER B	8"	9"	0"	0"	0"	0"

FONT INFORMATION**»» DOCUMENT FONTS**

PostScript Name	Macintosh Name	Style
Helvetica	Helvetica	Plain
Century-Book	ITCCentury Book	Plain
Helvetica-Light	L Helvetica Light	Plain
Century-Light	ITCCentury Light	Plain
Century-Book	ITCCentury Book	Bold+
Moore	Moore	Plain

»» SUPPORT LOGO (COLOR)

PostScript Name	Macintosh Name
Palatino-Roman	Palatino

... THE ABOVE MARKED "+" FONTS MAY CAUSE PRINT PROBLEMS.

FONTS SHOULD NOT BE STYLIZED THROUGH QUARKXPRESS.
A STYLE ATTRIBUTE IS NOT ALWAYS AVAILABLE AS A PRINTER FONT.
USE THE ACTUAL STYLIZED TYPEFACE IF IT IS AVAILABLE.

FIG. 3**FIG. 3(A)****FIG. 3(B)****FIG. 3(C)****FIG. 3(D)**

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FIG. 3(B) COLOR INFORMATION

»» DOCUMENT COLORS

Color	Model	Sep.	C%	M%	Y%	K%	R%	G%	B%	
BLACK	RGB	OFF	0	0	0	100	0	0	0	.
CYAN	RGB	OFF	100	0	0	0	0.7	62.6	77.6	.
MAGENTA	RGB	OFF	0	100	0	0	93.7	1.6	49.6	.
PANTONE 280 CV	PANTONE	ON	100	72	0	18.5	2.4	6.3	41.6	
PANTONE 300 CV	CMYK	OFF	100	43	0	0	3.7	36	65.2	.
WHITE	RGB	OFF	0	0	0	0	100	100	100	.
YELLOW	RGB	OFF	0	0	100	0	100	100	0	.

»» SUPPORT: LOGO (COLOR)

COLOR	MODEL	SEP.	C%	M%	Y%	K%	R%	G%	B%	
BLACK	RGB	OFF	0	0	0	100	0	0	0	.
CYAN	RGB	OFF	100	0	0	0	0.7	62.6	77.6	.
MAGENTA	RGB	OFF	0	100	0	0	93.7	1.6	49.6	.
YELLOW	RGB	OFF	0	0	100	0	100	100	0	.

»» SUPPORT: OBJECT(S) 1

COLOR	MODEL	SEP.	C%	M%	Y%	K%	R%	G%	B%	
BLACK	RGB	OFF	0	0	0	100	0	0	0	.
CYAN	RGB	OFF	100	0	0	0	0.7	62.6	77.6	.
MAGENTA	RGB	OFF	0	100	0	0	93.7	1.6	49.6	.
YELLOW	RGB	OFF	0	0	100	0	100	100	0	.

»» SUPPORT: AREA 1

COLOR	MODEL	SEP.	C%	M%	Y%	K%	R%	G%	B%	
BLACK	RGB	OFF	0	0	0	100	0	0	0	.
CYAN	RGB	OFF	100	0	0	0	0.7	62.6	77.6	.
MAGENTA	RGB	OFF	0	100	0	0	93.7	1.6	49.6	.
YELLOW	RGB	OFF	0	0	100	0	100	100	0	.

»» SUPPORT: AREA 2

COLOR	MODEL	SEP.	C%	M%	Y%	K%	R%	G%	B%	
BLACK	RGB	OFF	0	0	0	100	0	0	0	.
CYAN	RGB	OFF	100	0	0	0	0.7	62.6	77.6	.
MAGENTA	RGB	OFF	0	100	0	0	93.7	1.6	49.6	.
YELLOW	RGB	OFF	0	0	100	0	100	100	0	.

»» SUPPORT: OBJECT(S) 2

COLOR	MODEL	SEP.	C%	M%	Y%	K%	R%	G%	B%	
BLACK	RGB	OFF	0	0	0	100	0	0	0	.
CYAN	RGB	OFF	100	0	0	0	0.7	62.6	77.6	.
MAGENTA	RGB	OFF	0	100	0	0	93.7	1.6	49.6	.
YELLOW	RGB	OFF	0	0	100	0	100	100	0	.

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FIG. 3(B)(continued)**COLOR INFORMATION**

... THE COLORS MARKED "*" ABOVE MAY REPRESENT A POTENTIAL PRINT PROBLEM. EACH COLOR USED IN YOUR DOCUMENT SHOULD BE DEFINED AS A PROCESS COLOR - UNLESS YOU SPECIFICALLY WANT TO DEFINE A SPOT COLOR.

PROCESS SEPARATION SHOULD BE ON IN ORDER TO GENERATE THE APPROPRIATE MATCH
PROCESS SEPARATION OFF WILL DEFINE THE COLOR AS A SPOT COLOR.

COLOR	MODEL	SEP.	C%	M%	Y%	K%	R%	G%	B%
PANTONE									
116 CV	PANTONE	ON	0	15	94	0	100	85.1	0
PANTONE									
485 CV	PANTONE	ON	0	100	91	0	78.4	24.7	19.2

THE COLORS LISTED ABOVE HAVE BEEN DEFINED BUT NOT USED.

YOU MAY WANT TO CONSIDER DELETING THESE COLORS TO SPEED UP PROCESSING TIME.

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FIG. 3(C)**IMAGE INFORMATION**

»» SUPPORT: LOGO (COLOR)

FORMAT	TYPE	PAGE	X-SCALE	Y-SCALE	ANGLE	SKEW	STATUS	SIZE
EPSF	UNKNOWN	1	38%	38%	0°	0°	OK	103K

X/Y COORDINATES: 5.594" : 0.335"

IMAGE DIMENSIONS: 4.19" x 6.428"

BOX DIMENSIONS: 0.812" x 0.728"

»» SUPPORT: LOGO (COLOR)

FORMAT	TYPE	PAGE	X-SCALE	Y-SCALE	ANGLE	SKEW	STATUS	SIZE
EPSF	Unknown	1	38%	38%	0°	0°	OK	103K

X/Y COORDINATES: 1.6" : 5.826"

IMAGE DIMENSIONS: 4.19" x 6.428"

BOX DIMENSIONS: 0.812" x 0.728"

»» SUPPORT: OBJECT(S) 1

FORMAT	TYPE	PAGE	X-SCALE	Y-SCALE	ANGLE	SKEW	STATUS	SIZE
EPSF	Unknown	1	100%	100%	0°	0°	OK	2848K

X/Y COORDINATES: 0.68" : 2.836"

IMAGE DIMENSIONS: 2.708" x 2.917"

BOX DIMENSIONS: 2.625" x 2.845"

»» SUPPORT: COVER

FORMAT	TYPE	PAGE	X-SCALE	Y-SCALE	ANGLE	SKEW	STATUS	SIZE
EPSF	Unknown	1	100%	100%	0°	0°	Modified	7929K

X/Y COORDINATES: 4.441" : 2.566"

IMAGE DIMENSIONS: 3.528" x 4.931"

BOX DIMENSIONS: 3.118" x 4.872"

»» SUPPORT: AREA 1

FORMAT	TYPE	PAGE	X-SCALE	Y-SCALE	ANGLE	SKEW	STATUS	SIZE
EPSF	Unknown	2	103%	103%	0°	0°	OK	2258K

X/Y COORDINATES: 4.053" : 5.185"

IMAGE DIMENSIONS: 3.619" x 1.774"

BOX DIMENSIONS: 3.562" x 1.719"

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FIG. 3(C)(continued)**IMAGE INFORMATION**

»» SUPPORT: AREA 3

FORMAT	TYPE	PAGE	X-SCALE	Y-SCALE	ANGLE	SKEW	STATUS	SIZE
TIFF	Color	2	103%	103%	0°	0°	OK	469K

X/Y COORDINATES: 6.122" : 6.992"
 IMAGE DIMENSIONS 1.402" x 1.402"
 BOX DIMENSIONS 1.5" X 1.5"

»» SUPPORT: OBJECT(S) 3

FORMAT	TYPE	PAGE	X-SCALE	Y-SCALE	ANGLE	SKEW	STATUS	SIZE
EPSF	Unknown	2	103%	103%	0°	0°	Modified	1070K

X/Y COORDINATES: 4.053" : 7"
 IMAGE DIMENSIONS: 2.046" x 1.473"
 BOX DIMENSIONS: 2" x 1.5"

»» SUPPORT: OBJECT(S) 4

FORMAT	TYPE	PAGE	X-SCALE	Y-SCALE	ANGLE	SKEW	STATUS	SIZE
EPSF	Unknown	2	103%	103%	0°	0°	Missing	

X/Y COORDINATES: 0.375" : 6.614"
 IMAGE DIMENSIONS: 3.634" x 1.903"
 BOX DIMENSIONS: 3.562" x 1.875"

»» PASCAL: SUPPORT: AREA 2

FORMAT	TYPE	PAGE	X-SCALE	Y-SCALE	ANGLE	SKEW	STATUS	SIZE
EPSF	Unknown	2	103%	103%	0°	0°	OK	4042K

X/Y COORDINATES: 4.053" : 0.5"
 IMAGE DIMENSIONS: 3.591" x 3.19"
 BOX DIMENSIONS: 3.562" x 3.125"

»» SUPPORT: OBJECT(S) 2

FORMAT	TYPE	PAGE	X-SCALE	Y-SCALE	ANGLE	SKEW	STATUS	SIZE
EPSF	Unknown	2	102%	102%	0°	0°	OK	5036K

X/Y COORDINATES: 0.375" : 0.5"
 IMAGE DIMENSIONS: 3.57" x 3.938"
 BOX DIMENSIONS: 3.562" x 3.875"

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FIG. 3(C)(continued)
IMAGE INFORMATION

... THE ABOVE MARKED IMAGES "." REPRESENT A POTENTIAL PROBLEM(S).

REDUCED/ENLARGED IMAGES SHOULD BE SCALED IN THE PARENT APPLICATION.
SKEWED/ROTATED IMAGES SHOULD BE MODIFIED IN THE PARENT APPLICATION.
IMAGES SHOULD BE CROPPED TO SIZE IN THE PARENT APPLICATION.

ALL IMAGES SHOULD BE CONVERTED INTO CMYK FORMAT IN THE PARENT APPLICATION.

IMAGES THAT DO NOT HAVE AN OK STATUS SHOULD BE CHECKED AND UPDATED.

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FIG. 3(D)**TRAPPING INFORMATION**

AUTO METHOD:	ABSOLUTE
PROCESS TRAP:	ON
IGNORE WHITE:	ON
AUTO AMOUNT:	0.144 PT
INTERMINATE:	0.144 PT
OVERPRINT:	95%

ADDITIONAL PRINT PROBLEMS

ELEMENT	WIDTH	HEIGHT	BUTT?	FRAME/WIDTH	PAGE
PICTURE BOX	8"	0.25"	YES	0 pt	1

... THE ELEMENTS LISTED ABOVE REPRESENT POTENTIAL PRINT PROBLEMS.
CHECK ELEMENTS THAT BUTT THE EDGE OF THE PAGE, THEY MAY NEED TO BE BLED.
LINE/WIDTHS SHOULD BE DEFINED AS .25 PT OR LARGER.
LINES/FRAMES LESS THAN .25 PT MAY BECOME INVISIBLE AND/OR INCONSISTENT.

INTERNATIONAL SEARCH REPORT

Int'l Application No

PCT/US 95/12717

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G06F17/21

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP,A,0 388 050 (XEROX CORP) 19 September 1990 see abstract; claim 1; figure 9 see column 21, line 41 - column 22, line 15 ---	1-29
X	EP,A,0 602 547 (DAINIPPON SCREEN MFG) 22 June 1994 see abstract; claims 1,2; figure 1 see column 9, line 55 - column 10, line 17 ---	1-29
A	EP,A,0 332 557 (IBM) 13 September 1989 see abstract; claims 1-9 ---	1,13,18, 22
A	US,A,5 359 708 (BLOOMER HOLLY A ET AL) 25 October 1994 see abstract; claim 1 -----	1,13,18, 22

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

5 March 1996

Date of mailing of the international search report

08.03.96

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+ 31-70) 340-3016

Authorized officer

Suendermann, R

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 95/12717

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A-0388050	19-09-90	JP-A- 2297229 US-A- 5210824	07-12-90 11-05-93
EP-A-0602547	22-06-94	JP-A- 6180494	28-06-94
EP-A-0332557	13-09-89	CA-A- 1313271 JP-A- 2028758	26-01-93 30-01-90
US-A-5359708	25-10-94	NONE	